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EXAMINER	
LERNER, MARTIN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/660,468	JABRI ET AL.	
	Examiner	Art Unit	
	MARTIN LERNER	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18,20-23,26-29,35 and 56-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18, 26, 28, 35, 56 to 62, 66 to 68, and 72* is/are rejected.

7)☒ Claim(s) *20 to 23, 27, 29, 63 to 65, and 69 to 71* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 72 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of "the frame class and zero or more of the one or more source voice parameters, the one or more interpolated voice parameters, and the one or more external commands" is indefinite and confusing. The limitation of "zero or more" is not conventional, and it is unclear whether the "zero or more" applies only to the one or more source voice parameters, or the voice parameters, the interpolated voice parameters, and the external control commands, too. Thus, the claim construction of alternative limitations is confusing.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 18, 26, 28, 35, 59 to 62, 67, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Suzuki et al. ('831)* in view of *Manjunath et al. ('438)*.

Concerning independent claim 18, *Suzuki et al. ('831)* discloses a method for voice code conversion, comprising:

"unpacking the source codec bitstream to at least one or more source voice parameters " – code separator 81 separates the voice code of the encoding method 1, which code enters from the encoder 61a of terminal 61 via the transmission path 71, into codes of a plurality of components necessary to reproduce the voice signal (column 11, lines 2 to 7: Figure 1);

"interpolating the one or more source voice parameters to one or more interpolated voice parameters if a difference exists between at least one of a source frame size and a destination frame size or a source subframe size and a destination subframe size or a source sampling rate and a destination sampling rate" – G.729A and AMR have different frame lengths and different numbers of subframes per frame (column 6, lines 21 to 39); in case where voice code is converted from the G.729A to the AMR method, one frame consists of four subframes in AMR, and only the LSP parameters of the final subframe are quantized and transmitted; in the decoder, therefore, LSP parameters are found from the dequantized value of the previous frame and the LSP parameter of the 3rd subframe in the present frame in accordance with an interpolation equation (column 18, lines 14 to 62: Figure 11: Equations (22) to (24)); thus, interpolation is performed when converting between AMR and G.729A;

"mapping the one or more source voice parameters or the one or more interpolated voice parameters to one or more mapped voice parameters" – voice code conversion unit 80 includes an LSP code converter 82, a pitch-lag code converter 83, an algebraic code converter 84, and a gain code converter 85 (column 10, line 66 to column 11, line 45: Figures 1 and 2); conversion of codes from encoding method 1 to codes of encoding method 2 involves "mapping" of voice parameters;

"packing the one or more mapped voice parameters into the destination variable-rate codec bitstream" – code multiplexer 86 multiplexes these codes of the encoding method 2 and sends the multiplexed signal to the transmission path 72 (column 11, lines 12 to 14: Figures 1 and 2).

Concerning independent claim 18, *Suzuki et al. ('831)* discloses voice code conversion, where AMR includes eight encoding modes (column 12, lines 17 to 19), but does not disclose the steps of classifying a frame class selected from three or more frame classes and determining a rate from at least one of the source voice parameters from three or more rates associated with the destination variable-rate codec format. However, it is fairly well known for multi-rate speech coding to classify a frame based on voicing characteristics and to encode the frame at a different rate depending upon what voicing characteristics the frame contains. Specifically, *Manjunath et al. ('438)* teaches:

"classifying a frame class based upon the one or more source voice parameters or the one or more interpolated voice parameters, wherein the frame class is selected from three or more frame classes" – based on the energy content of the frame and the periodicity, mode classification module 408 classifies the frame as nonspeech, inactive

speech, voiced, unvoiced, or transient (column 10, lines 23 to 39: Figure 5); thus, there are three or more frame classes;

"determining a rate from at least one of the one or more source voice parameters, the one or more interpolated voice parameters, the frame class, and one or more external control commands, wherein the rate is selected from three or more rates associated with the destination variable-rate codec format" – classifying the speech frames is advantageous because different encoding modes 410 can be used to encode different types of speech, resulting in more efficient use of channel bandwidth in a shared channel such as the communication channel 404 (column 10, lines 51 to 58: Figure 5); different encoding modes 410 advantageously operate according to different coding bit rates including full rate, half rate, quarter rate, and/or eighth rate (column 11, lines 7 to 11: Figure 5); thus, there are at least three or more rates associated with the codec format; the rate is determined by mode classification module 408 from energy content and periodicity (column 10, lines 32 to 39: Figure 5), which determine "the frame class", meeting the "from at least one of" limitation.

Concerning independent claim 18, therefore, *Manjunath et al. ('438)* teaches that it is advantageous to classify the speech so that different encoding modes can be used to encode different types of speech, resulting in more efficient use of channel bandwidth in a shared channel. (Column 10, Lines 51 to 58: Figure 5) It would have been obvious to one having ordinary skill in the art to provide frame classification and rate determination as taught by *Manjunath et al. ('438)* in a voice conversion method of

Suzuki et al. ('831) for a purpose of encoding different types of speech at different bit rates making more efficient use of channel bandwidth in a shared channel.

Concerning claim 26, *Suzuki et al. ('831)* discloses a mapping strategy for mapping LSP coefficients with an LSP code converter 82, quantizing LSP coefficients with LSP quantizer 82b, mapping pitch-lags ("excitation parameters") with a pitch-lag code converter 83, and quantizing pitch-lags with pitch-lag quantizer 83b (column 11, lines 25 to 45: Figure 2); pitch-lags, algebraic codes, and gain codes make up excitation parameters (Compare Specification, Page 10, Lines 3 to 6); moreover, a mapping strategy must be chosen from one of a plurality of mapping strategies because there are eight encoding modes in AMR (column 12, lines 17 to 19), and there are additional encoding methods than AMR and G.729A, implicitly.

Concerning claim 28, *Suzuki et al. ('831)* discloses at least "a direct space mapping of voice parameters".

Concerning claim 35, *Suzuki et al. ('831)* discloses a mapping without converting a signal back to a speech signal domain because LSP codes, pitch-lag codes, algebraic codes, and gain codes are converted directly from a code of encoding method 1 to a code of encoding method 2, without reconstructing the speech signal.

Concerning claim 59, *Suzuki et al. ('831)* discloses converting between different ones of the eight types of AMR encoding modes (column 6, lines 21 to 39; column 12, lines 17 to 19).

Concerning claim 60, *Manjunath et al. ('438)* teaches at least silence, unvoiced, and transient ("non-stationary") (column 10, lines 32 to 39), which are three of the frame classes.

Concerning claim 61, *Manjunath et al. ('438)* teaches full rate, half rate, and eighth rate (column 11, lines 10 to 11).

Concerning claim 62, *Suzuki et al. ('831)* discloses at least three mapping paths for LSP code, pitch-lag code, algebraic code, and gain code (column 10, line 66 to column 11, line 14: Figure 1).

Concerning claim 67, *Suzuki et al. ('831)* discloses an embodiment where there are two subframes per frame (column 2, lines 18 to 20); in G.729A, one frame is composed of two subframes, and in the AMR method, one frame is composed of four subframes (column 6, lines 34 to 39); voice code conversion ("transcoding") is between AMR and G.729A, so either can be the destination codec.

Concerning claim 72, *Manjunath et al. ('438)* teaches determining an encoding mode from a classification of a speech frame ("the rate is determined from the frame class") (column 10, line 51 to column 11, line 11); if the limitation of "zero or more" of the voice parameters, interpolated voice parameters, and external control commands is interpreted literally, then the rate depends only on the frame class.

5. Claims 56 to 58 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Suzuki et al. ('831)* in view of *Manjunath et al. ('438)* as applied to claim 18 above, and further in view of *Chu et al.*

Suzuki et al. ('831) omits destination codecs of EVRC, SMV, and relaxed CELP, where the destination variable-rate codec is characterized by 3 subframes per frame. However, *Chu et al*. teaches a transcoder having tandem free operation (TFO), where the codecs are selected from SMV and EVRC. (¶0015], ¶[0027]: Table 1) Moreover, Applicants' Specification, Page 11, ¶[0047], says that EVRC and SMV are based on a principle of relaxed CELP, so relaxed CELP is implicit in a disclosure of EVRC and SMV. Furthermore, Applicants' Specification, Page 13, ¶[0055], states that EVRC has three subframes per frame, implicitly. Thus, *Chu et al*.'s disclosure of EVRC includes three subframes per frame, implicitly. An objective is to provide codec devices to process audio data to enhance voice quality. (¶[0001]) It would have been obvious to one having ordinary skill in the art to utilize codecs of EVRC, SMV, and relaxed CELP as taught by *Chu et al*. in a method of voice code conversion of *Suzuki et al. ('831)* for a purpose of processing audio with enhanced voice quality.

6. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Suzuki et al. ('831)* in view of *Manjunath et al. ('438)* as applied to claim 18 above, and further in view of *Tsuchinaga et al.*

Manjunath et al. ('438) teaches that classifying a speech frame is performed based upon energy and periodicity, which would necessarily imply that a frame must be reconstructed in a transcoder in order to classify the frame. Thus, *Manjunath et al. ('438)* omits classifying a frame without reconstructing a speech signal. However, *Tsuchinaga et al.* teaches a speech transcoding method, where at least for a silence

frame, a silence code is transmitted, and a type of frame is identified based on the silence code. (Column 9, Lines 47 to 60) A frame-type detector 52 detects the frame-type information Ftype1 from entered code data bst1 and outputs the frame-type information Ftype1 to a transcoding controller 53, identifying speech activity segments and silence segments based on the frame-type information Ftype1. (Column 12, Lines 27 to 35: Figure 1) Thus, *Tsuchinaga et al.* teaches a feasible method for transcoding based on frame type information including speech and silence without reconstructing a speech signal. An objective is to transcode between two silence encoding methods without decoding a CN code to a CN signal. (Column 9, Lines 8 to 16) It would have been obvious to one having ordinary skill in the art to classify a frame without reconstructing a speech signal as taught by *Tsuchinaga et al.* in a method of variable rate speech encoding of *Manjunath et al. ('438)* for a purpose of transcoding between silence encoding methods without decoding a CN code to a CN signal.

Allowable Subject Matter

7. Claims 20 to 23, 27, 29, 63 to 65, and 69 to 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicants' arguments filed 28 December 2007 have been considered but are moot in view of the new grounds of rejection, necessitated by amendment.

Conclusion

9. Applicants' amendment necessitated the new grounds of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Manjunath et al. ('518) and Hardwick disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin Lerner/

Primary Examiner, Art Unit 2626

March 5, 2008